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Dear California

Dear California,

The world has changed since our last quarterly extension newsletters (UC Davis Vet Med Extension Digest, California Dairy Newsletter Poultry Ponderings) were sent out to you last winter. All of our work and personal lives have changed in every way possible and the “new normal” whatever that looks like will be different also...

Our job in Cooperative Extension is to communicate the latest science-based information to stakeholders like farmers, ranchers, youth and the general public on a wide variety of topics including: food safety, animal health and well-being, education and the environment. As part of this mission we give literally hundreds of talks, workshops, seminars etc. every year in multiple venues and formats including scientific conferences, farmer meetings, state and county legislative events, broadcast media, and 4-H and community based events among others. This mission has been severely curtailed by the COVID-19 pandemic. However, our work will continue, and as we recalibrate our efforts, the ideal methods of how to best deliver extension based materials to our audience will change. New methods of communication will evolve, but our core mission to do applied research and communicate results to our California stakeholders will remain the same. To that point Cooperative Extension is making every effort to continue our mission to all Californian's. Please feel free to reach out with questions, requests, comments, deep thoughts, and not so deep thoughts, in the months ahead.

To learn more about the UC Davis School of Veterinary Medicine Extension team please visit our website at:

<https://vetext.vetmed.ucdavis.edu/>

Stay safe,
UC Davis School of Veterinary Medicine- Extension



UCD Vet Med Extension Team.

Left to right: Martin Smith, Gaby Maier, Fernanda Ferreira, Pramod Pandey, Emmanuel Okello, Noelia Silva-del-Rio, Alda Pires, and Maurice Pitesky



New team addition Rosie Busch

VMEX CE Specialist Discusses the Impact of COVID-19 on Dairy Production and the Availability of Dairy Products to Consumers Across the US

CE Specialist Fernanda Ferreira launched a new series of webinars named **“20’ at the Dairy Office”** to discuss important topics with the dairy industry that directly impacts farm management and decision-making. The objective is to provide valuable information through discussion with experts and science-based short presentations to help dairy producers and consultants to make better-informed decisions to improve their operations.

In the first episode, she hosted a webinar with Dr. Daniel Sumner, distinguished professor of Agriculture Economics at UC Davis, and Annie AcMoody, economist for the Western United Dairies. The discussion was focused on understanding how COVID-19 has disrupted the dairy supply chain in the US and ultimately affected the availability of dairy products to the final consumer.

According to Annie, particularly for dairy, the crisis started when all the restaurants locked down. Half of Americans’ food budget is spent eating out, and when the lockdowns started, a lot of the restaurant demand shifted to retail sales. This sudden shift caused a disruption in the production line and logistics of dairy industries, which is why consumers were having restrictions in the amount of fluid milk they could buy at once. This disruption has not only caused some producers to dump some of their milk, but also it has negatively affected milk prices received by farmers.

Going forward, Dan Sumner explains that a combination of disrupted foodservice markets and a loss of income by Americans may extend the period with low milk prices received by farmers. Dairy farmers are set up to be optimal and efficient, guaranteeing the pro-



Webinar 20’ at the Dairy Office. Clockwise from top left: AcMoody, Ferreira, and Sumner.

duction of a nutritious product following high standards of milk quality and animal welfare. Therefore, it is important that dairy farmers get prepared for tough times to come. Annie advises farmers to obtain detailed information on government assistance programs. Farmers should also talk to their veterinarians and nutritionists to design a management plan that better fits their production needs for the future.

Finally, lower market milk prices may likely reflect in lower dairy prices for consumers. Programs such as the federal Nutrition Assistance Program and the Special Supplemental Nutrition Program for Women, Infants and Children, among others, are fully supported by dairy farmers. These programs not only guarantee access to healthy and nutritious food to low income people, but also provides an outlet for highly perishable dairy products.

The full webinar can be accessed on Dr. Ferreira’s lab (*At the Dairy Office*), VMEX, or UC ANR YouTube channels.

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Research in the Times of COVID-19

These are certainly unprecedented times – most of us are restricted to staying at home as much as we can. I am mostly working at my desk at home, communicating with students and colleagues via video conferencing. As many in society have lost their jobs because of the shut-down of social interactions, others are deemed essential such as health care workers but also grocery store employees, those producing our food, and others who are making sure that our essential goods and services keep being available.

In an effort to comply with social distancing and protecting the student body and everyone related to them, instruction for all students at UC Davis has gone virtual, even for most veterinary students in the clinical rotations. The veterinary teaching hospital is still open for emergencies, but routine and non-emergency cases are not seen for the time being, similar to what is the case in human medicine.

Non-critical research at UC Davis has also come to a stop in order to limit direct human interactions in labs and elsewhere. Some projects are allowed to continue, for example those where discontinuation would lead to catastrophic data loss, and with special precautions in place. In addition, all animals on campus and in research facilities are still being cared for in the same way as before the crisis. We are all trying to continue our work in research and extension as much as possible under the current circumstances, but the formats are changing. In-person workshops and presentations are out of the question at the moment, so providing information via social media, newsletters,



Researchers continuing their work through the COVID-19 pandemic.

webpages, or articles is key at the moment.

Two recent outreach articles related to the COVID-19 outbreak include tips on how to stay safe during spring cattle work, which can be found at this [link](#), and explain the difference between coronavirus in livestock and the novel coronavirus in people, which can be found by clicking [here](#).

For beef herd health and production, a trial in stocker steers at Sierra Foothill Research and Extension Center that evaluates the use of ionophores in mineral mix on growth was started in December and will continue until its conclusion in late May. Precautions for study

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Research in the Times of COVID-19

cont.

staff include keeping distances of at least 6 feet between personnel as well as wearing personal protective equipment in the form of gloves and masks. The use of electric prods to enforce social distancing, as demonstrated by livestock advisor Josh Davy in the photo taken at the cattle chute at the research center, may be a bit extreme, but all jokes aside, keeping your distance and being mindful of what surfaces to touch, sticking to one task to avoid possible contamination of surfaces and of course handwashing and disin-

fection of utensils are good ideas that we practice in order to stay safe. We are also keeping the number of personnel involved to a minimum, which means no student volunteers at this time.

We wish everyone to stay healthy and safe during these uncertain times. We are still doing our best to continue our research and outreach efforts without compromising the health of those involved.

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Chickens Don't Get COVID-19

Key points:

- Multiple global studies shows that chickens and other domestic poultry are not susceptible to COVID-19.
- Transmission of coronavirus (of which COVID-19 is one of many types) from poultry to humans or vice versa has not been demonstrated to be an issue.
- Poultry based foods including, eggs and poultry meat are safe to eat.
- Regardless, always handle poultry products and all food with good food safety practices

Background on coronaviruses:

Coronaviruses are ubiquitous in animals and they are typically associated with mild respiratory signs. While coronaviruses are ubiquitous, they typically “stick” to their species. In other words chicken coronaviruses stick to chickens, dog coronavirus-

es stick to dogs etc. etc. Very rarely do we have transmission of a virus from one species to another. Unfortunately we are dealing with a rare situation now where a virus has “jumped the species barrier” from bats to humans.

The most common poultry version of a coronavirus is a virus called Infectious Bronchitis Virus (IBV). The virus has multiple “versions” that are typically identified with names like Delaware, California variant 99 and Arkansas type. This reflects the slightly different genetics of each strain. Interestingly in the “poultry world” there are different vaccines for different

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Chickens Don't Get COVID-19

cont.

coronaviruses. It will be interesting to see if eventually COVID-19 mutates enough overtime to require multiple vaccine types in humans (assuming that we are able to develop a COVID-19 vaccine...).

Big picture with respect to chickens, food safety and COVID-19, remember coronaviruses are respiratory viruses that are transmitted from person to person primarily via the respiratory route. There have been no documented cases of the virus being transmitted via an oral inoculation from a contaminated product (i.e. think of virus being deposited on food by an infected individual).

That being said, the virus has been found in the stool of a small percentage of COVID-19 positive individuals. Hence if

someone asked if there is a chance that you could get infected by ingesting the virus, the short answer would be “sure maybe it’s possible.” However, remember this is biology and in biology there

are very rarely absolutes. That being said, based on our historic and emerging knowledge of coronaviruses, the primary route of infection is airborne. Practicing good hygiene, husbandry and biosecurity with your poultry in a COVID-

19 world is no different than a non COVID-19 world. When it comes to poultry, let’s keep our “eyes on the ball” and focus on the greater risks with respect to food safety such as *Salmonella* and *Campylobacter*.

Maurice Pitesky
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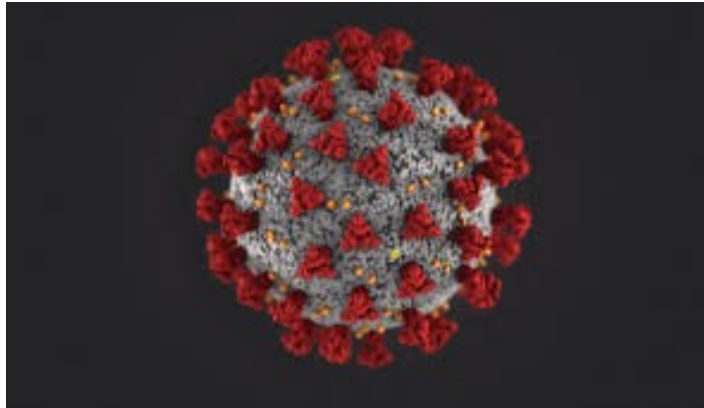


Photo credit: <https://www.cdc.gov/>

Trivia: How do Japanese Honeybees fight off giant hornets?

Answer from last issue: Who invented the term “zoonosis”?

Dr. Rudolf Virchow was a German pathologist known as the “Father of Modern Pathology”. During the 19th century, he studied and discovered the full life cycle of the parasite *Trichinella spiralis* in swine. He described how this parasite passed from pigs to humans, causing the disease trichinosis.

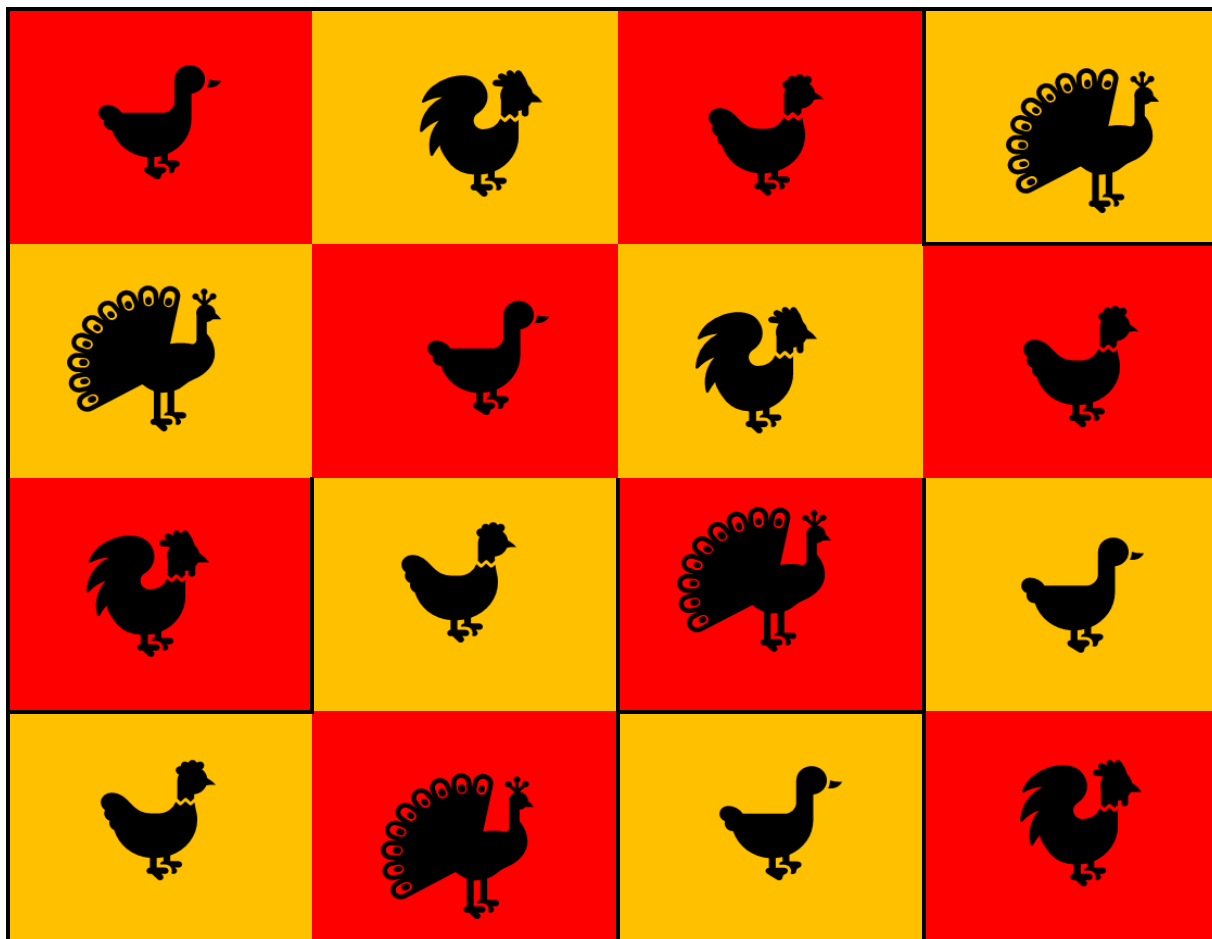
Zoonoses are defined as diseases transmitted from animals to humans.

Want to learn more? Visit:

<https://www.cdc.gov/onehealth/basics/history/index.html>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2603088/>

Dr. Cluck's Puzzle

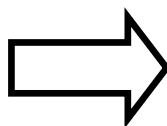
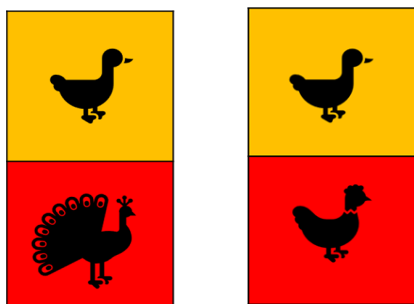
solved



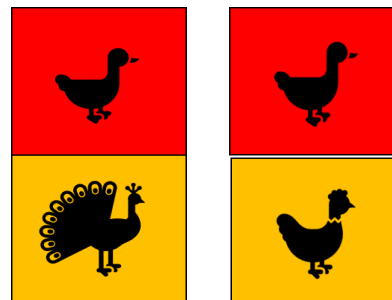
****Important note*:***

We made a mistake on our last puzzle. We provided the incorrect colors of puzzle pieces, as seen below. We send our apologies for this mistake.

Given tiles



Correct tiles



Greenhouse Gas Emission: Conventional vs Organic Dairy Farming

Greenhouse gas (GHG) emissions into the earth's atmosphere is a pressing environmental issue. Based on California Air Resources Board, the main GHG emission sources in California are transportation (41%) and industrial (21%) activities, with agriculture (livestock and crops) contributing 8% of the total emissions. Agriculture can act as both a sink and a source of GHG. For example, carbon (CO_2) is sequestered in crops and can remain in the soil as organic matter. Sources of GHG emissions in farming operations include fuel used to operate machinery, fertilizer applications and gas produced from enteric fermentation of ruminant livestock species.

Reduction of animal protein intake has been postulated as a mitigation strategy to reduce agricultural GHG emissions. If the US population became vegan (no meat, eggs, dairy or fish), total agricultural GHG emissions will be reduced (28%) [1]. But, under this new scenario, the nutritional requirement of US population will

not be met. Alternatively, converting conventional farms into organic operations has been proposed. The premise behind this approach is that organic farms require less inputs (i.e. no fertilizer, less imported feeds, less fuel consumption) and promote soil carbon sequestration. However, in the past decades, research studies have produced mixed results. In some production systems, switching to

organic can result in a reduction of GHG emissions per ton of final product but only production efficiency is sustained.

Recently, UK researchers have evaluated the implications of converting conventional food production farms into organic farms [2]. Authors predicted that this

decision would decrease GHG emissions in the country, but at the expense of **increasing global emissions by approximately 21%**. This increase in global GHG emissions was explained by the need to increase farmland overseas to compensate for the 40% decrease in domestic production. Under this scenario, the UK will have to significantly increase imports of



Photo credit: <https://www.bbc.co.uk/>

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Greenhouse Gas Emission: Conventional vs Organic Dairy Farming cont.

oilseeds, pork, poultry meat, eggs and milk. Approximately, 1.5 more land is needed in organic vs. conventional production systems. Researchers assumed that 50% of the land used overseas would not be farmland and it would need to be converted from forest to farmland. Under this assumption, GHG emissions will increase by 21%. However, if 100% of the land is changed from forest to farmland the estimated increase in GHG emissions would be 56%. If all land used was already farmland, emissions would not increase.

Switching UK conventional dairy farms to organic production systems was estimated to reduce GHG emissions from dairies in the country by 4% and reduce milk production by over 20% (lower milk yield per head, and lower feed conversion). Pasture-based feeding during summer with or without feed supplementation at milking time is a common practice in the UK. Thus, results from this study are not directly applicable to California where milk is mainly produced in conventional, intensive dairy operations surrounded by high value crops (i.e. nuts, grapes, citrus) or urban encroachment. In California, dairies have a very limited capacity to transition to pasture-based feeding systems. Existent organic dairies either transitioned from pasture-based feeding programs (Northern California) or are based in land areas less suited for irrigated high-value crops. Based on California Department of Food and Agriculture (CDFA) data, production efficiency is lower in organic operations with double the feed and

labor cost per unit of milk produced. Based on 2017 CDFA data, organic producers have revenues three times higher per hundredweight than conventional producers, but this economic advantage will disappear if supply increased.

Research suggests that transitioning conventional dairy farms into organic production systems will not reduce worldwide GHG emissions. It will require more cows under the organic system to produce the same milk as current conventional systems.

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Vet Med Extension

Jennifer Heguy
UC ANR Dairy Advisor

Citation

1. White, R.R., and M.B. Hall. 2017. *Nutritional and greenhouse gas impacts of removing animals from US agriculture. Proceedings from the National Academy of Sciences of the United States of America.* 114 (48) 10301-10308
2. Smith, L.G., G.J.D. Kirk, P.J Jones, et al. *The greenhouse gas impacts of converting food production in England and Wales to organic methods. Nat Commun* 10, 4641 (2019). <https://doi.org/10.1038/s41467-019-12622-7>

Tuesdays in June

The annual 4-H Animal Science Symposium is co-hosted by the California 4-H Youth Development Program and Veterinary Medicine Extension. The overarching goal of the Symposium is to serve as a professional development opportunity for 4-H educators who deliver Animal Science programs to 4-H youth in California. Annually over the past several years, 40-50 participants – 4-H county academics and staff, adult volunteers, and teen leaders – have attended this event held at the UC-Davis School of Veterinary Medicine (SVM). Keynote speakers at the Symposium have included Dean Michael Lairmore, Dr. Glenda Humiston, Dr. Patricia Conrad, Dr. Joan Rowe, Dr. Richard Blatchford, and Ms. Lynn Schmitt-McQuitty.

Each year the 4-H Animal Science Symposium focuses on one or more issues facing youth who raise and show project animals at public venues. Among these issues include biosecurity, animal welfare, pre-harvest food safety, predator/livestock interactions, and antimicrobial use and stewardship. 4-H Animal Science projects are considered by many to be the “face of the 4-H Program,” and it is critical for youth to have the requisite knowledge and skills to address these issues in an informed manner. To this end, Symposium participants have opportunities to attend hands-on workshops that feature issues-based, published curriculum materials that utilize effective teaching methods, and concurrent sessions on cutting edge research presented

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Tuesdays in June cont.

by faculty from the College of Agriculture and Natural Resources, CE Specialists from Veterinary Medicine Extension and the Department of Animal Science, UC Agriculture and Natural Resources Advisors, and SVM faculty.

Due to the COVID-19 pandemic, the 2020 4-H Animal Science Symposium will occur virtually. The *Tuesdays in June* webinar series will comprise three virtual professional development opportunities featuring recently published 4-H curricula. On June 02, participants will be introduced to the curriculum entitled *Animal Welfare Proficiencies in 4-H*; on June 09, the *At the Interface Between Livestock and Predators* curriculum will be presented; and on June

16, attendees will become familiarized with the curriculum entitled *A 'Fear-Less' Approach to Understanding Dogs, their Care, and Training*. Researchers and practitioners in the fields represented by each curriculum will be featured speakers on these webinars. Included among the guest speakers will be: Dr. Melissa Bain, Dr. Niamh Quinn, Dr. Carolyn Whitesell, Dr. Cheryl Meehan, Mr. Dan Macon, and Dr. Brian Greco.

For more information on the *Tuesdays in June* webinars, contact Dr. Martin H. Smith at mhsmith@ucdavis.edu.

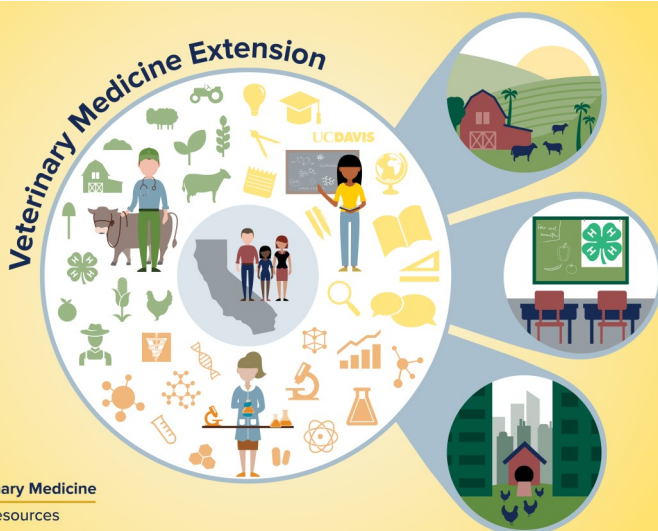
Martin H. Smith, MS, EdD

Dates:

June 2nd: Animal Welfare Proficiencies in 4-H

June 9th: At the Interface Between Livestock and Predators

June 16th: A 'Fear-Less' Approach to Understanding Dogs, their Care, and Training



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